APPENDIX A: FEDERAL TRANSPORTATION POLICIES

Federal transportation policies (through the Intermodal Surface Transportation Efficiency Act of 1990 as well as subsequent transportation bills, including the most recent legislation passed in 2005: The Transportation Equity Act – A Legacy for Users) strongly support the inclusion of pedestrian and bicycle facilities in transportation projects, and have supplied a consistent source of funding for these activities for the past fifteen years.

Section 1202 of the 1998 federal law, the Transportation Equity Act for the 21st Century (TEA-21) states that:

- "*Bicyclists and pedestrians shall be given due consideration in the comprehensive transportation plans developed by each metropolitan planning organization and State.*" (Section 1202(a));

- "*Bicycle transportation facilities and pedestrian walkways shall be considered, where appropriate, in conjunction with all new construction and reconstruction and transportation facilities, except where bicycle and pedestrian use are not permitted.*" (Section1202(a)); and

- "*Transportation plans and projects shall provide due consideration for safety and contiguous routes for bicyclists and pedestrians*." (Section 1202(a))

Federal law, as established in the Transportation Equity Act for the 21st Century (TEA-21), makes the following statements with respect to bridges:

"In any case where a highway bridge deck is being replaced or rehabilitated with Federal financial participation, and bicyclists are permitted on facilities at or near each end of such bridge, and the safe accommodation of bicyclists can be provided at reasonable cost as part of such replacement or rehabilitation, then such bridge shall be so replaced or rehabilitated as to provide such safe accommodations." (23 U.S.C. Section 217)

Policy Guidance

TEA-21 directed the Federal Highway Administration to draft policy guidance that would better define the level of accommodation that was required. In 1999, the Federal Highway Administrator issued the following guidance with regards to pedestrian and bicycle accommodations:

"While these sections stop short of requiring specific bicycle and pedestrian accommodation in every transportation project, Congress clearly intends for bicyclists and pedestrians to have safe, convenient access to the transportation system and sees every transportation improvement as an opportunity to enhance the safety and convenience of the two modes. "Due consideration" of bicycle and pedestrian needs should include, at a minimum, a presumption that bicyclists and pedestrians will be accommodated in the design of new and improved transportation facilities. In the planning, design, and operation of transportation facilities, bicyclists and pedestrians should be included as a matter of routine, and the decision to not accommodate them should be the exception rather than the rule. There must be exceptional circumstances for denying bicycle and pedestrian access either by prohibition or by designing highways that are incompatible with safe, convenient walking and bicycling."

In the FHWA's subsequent Design Guidance issued in 2000 (entitled Accommodating Bicycle and Pedestrian Travel: A Recommended Approach), the following statement is made:

1. Bicycle and pedestrian ways shall be established in new construction and reconstruction projects in all urbanized areas unless one or more of three conditions are met:

- *bicyclists and pedestrians are prohibited by law from using the roadway. In this instance, a greater effort may be necessary to accommodate bicyclists and pedestrians elsewhere within the right of way or within the same transportation corridor.*
- *the cost of establishing bikeways or walkways would be excessively disproportionate to the need or probable use. Excessively disproportionate is defined as exceeding twenty percent of the cost of the larger transportation project.*
- *where sparsity of population or other factors indicate an absence of need. For example, the Portland Pedestrian Guide requires "all construction of new public streets" to include sidewalk improvements on both sides, unless the street is a cul-de-sac with four or fewer dwellings or the street has severe topographic or natural resource constraints.*

2. In rural areas, paved shoulders should be included in all new construction and reconstruction projects on roadways used by more than 1,000 vehicles per day, as in States such as Wisconsin. Paved shoulders have safety and operational advantages for all road users in addition to providing a place for bicyclists and pedestrians to operate.

APPENDIX B: FACILITY DESIGN INFORMATION

All new roadways in Fauquier County should be planned and designed as multi-modal facilities, consistent with the new VDOT policy. This section provides design guidelines for incorporating pedestrian and bicycle facilities into transportation and development projects in Fauquier County.

This Appendix includes some general recommendations for facility design, but it is not a design guide. Speed, traffic volume, adjacent land use, intersections, and many other factors must all be considered when constructing a facility. The Parks and Recreation Department should use the following national and state standards in preparing their own standards for facility design:

- Americans with Disabilities Act Accessibility Guidelines (ADAAG) (United States Access Board 2003).
- *Guidelines for the Development of Bicycle Facilities* (Association of American State Highway Transportation Officials (AASHTO) 1999)
- *Guide for the Planning, Design, and Operation of Pedestrian Facilities* (Association of American State Highway Transportation Officials (AASHTO) 2004)
- *Virginia Bicycle Facility Resource Guide* (Virginia Department of Transportation, 2002)
- *Manual on Uniform Traffic Control Devices,* Federal Highway Administration (FHWA) – latest edition

These documents may serve as references for future design projects, however County standards are the prevailing requirements.

Designing Trails for Multiple Users

Multi-Use Trail:
Multi-use trails (also called "shared use paths") are separated from motorized vehicular traffic by an open space or barrier and located either within the highway right-of-way (often termed "parallel shared use path") or within an independent right-of-way. Trails may also be used by pedestrians, skaters, wheelchair users, joggers, hikers, people with baby strollers and a wide variety of other non-motorized users. In some cases, shared use paths also accommodate equestrians.

Path Cross Section
Multi-use trails should be designed with consideration given to the volumes, various speeds and space requirements of different user groups. Generally, multi-use trails should be designed with a minimum cross section of 10 feet with 2 foot shoulders. This will enable the trail to operate as a two way facility. In areas with high volumes of trail users, 12-14 foot widths are recommended. In extremely constrained conditions, or for neighborhood trail connectors, trail width can be reduced to 8', however this is generally only appropriate for short sections of trails, or for trails that are not anticipated to carry high volumes of users.

Trail users generally co-exist on multi-use trails without requiring separate lanes for pedestrian versus bicycle traffic. For trails with extremely high volumes of pedestrians, however, it can be sometimes helpful to provide a separate treadway to minimize conflicts and improve the safety and comfort of the users.

Surface Types
The surface of the trail should typically be of asphalt. In some circumstances it may be appropriate to construct the path with a soft surface where the primary uses are mountain biking, horseback riding or running. Soft surface trails are generally not recommended in areas prone to flooding or where steep grades would cause the erosion of the trail surface. The surface should be designed to withstand the loads transferred by the heaviest maintenance vehicle intended to travel along the pathway.

Accessibility
The Americans with Disabilities Act (ADA) prohibits public entities from designing new facilities or altering existing facilities, including sidewalks and trails, that are not accessible to people with disabilities. Multi-use trails should comply with the guidelines set forth in the Americans with Disabilities Act Accessibility Guidelines (ADAAG). The design for accessibility should also be applied to all connections to the multi-use trail including parking lots, neighborhood connectors, adjoining roadways, and adjoining facilities (rest stops, buildings, restrooms, etc.)

Cross slopes on shared use paths should not exceed 2%. Running grades should be kept to minimum to provide for maximum accessibility. Every effort should be made to ensure running grades are kept within ADA guidelines on shared use paths. In limited circumstances where achieving these grades would be prohibitively expensive or would denigrate a unique natural environment, exceptions can be made to running grade requirements. Making such an exception does eliminate the responsibility to meet ADA guidelines on all other aspects of trail design. The following steps should be taken to mitigate steeper grades in these situations:

- Provide flat landings with benches to enable trail users to stop and rest if necessary
- Provide hand rails on the sides of the trail
- Widen the trail to allow more space for slower users
- Provide an alternative accessible route and use signage to direct people with physical disabilities to the route

Steep downgrades *are not* recommended at roadway intersection approaches. Every effort should be made to keep intersection approaches at or below a 5% slope in order to reduce the possibility of a bicyclist or other wheeled user losing control and crashing into the intersection.

Shoulders
Two-foot wide graded shoulders should be provided along the entire length of the path unless right of way is constrained. The shoulders should typically be of some soft material to serve walkers and runners who prefer soft surfaces. If the trail will serve equestrians, the shoulders should be constructed of a 5' wide soft surface shoulder such as granular stone or dirt. In many cases, however, equestrians prefer a separated

trail within the same corridor to reduce conflicts with other users (see section below on equestrian trail planning and design).

Equestrian Trail Planning and Design:

Equestrian trails are an important component of the proposed trail network in Fauquier County. As such, it is critical that trails that are planned to be shared between horseback riders and other trail users are adequately planned and designed to safely accommodate these multiple users. Below are some general guidelines for planning and designing trails to accommodate equestrian use:

- Equestrian trails are generally 2-25 miles in length, therefore trails that are shorter than 2 miles in length (such as the Warrenton Branch Trail) are unlikely to appeal to equestrians unless they are extended.
- Equestrian trails are generally soft surface trails and are often constructed adjacent to an asphalt trail when multiple users are intended to use the facility.
- Equestrian trails require regular evaluation and significant maintenance because the weight of the horse and rider is channeled through a small hoof, creating a greater impact on the trail tread. The maintenance program should also include the removal of manure.
- Special attention is needed on multi-use trails that incorporate equestrian use to minimize conflicts between users. Horseback riders need education regarding the need to manage their horse during passing events, and trail users need education regarding the proper way to pass a horse while using the trail. Proper trail etiquette can help to reduce or eliminate conflicts on these multi-use trails.
- On longer trails in which equestrian users are anticipated to "trailer-in," separate access parking and staging areas are needed for people arriving with trailers and horses. Multi-use trails that accommodate horses also need tethering spots, and access to water fountains.
- Adequate and clear signage is needed on multi-use trails that accommodate horses both to indicate areas where horses are allowed and where horses are not allowed.

On-Road Bikeway Types:

Shared Roadways

Shared Roadways are those streets and roads where bicyclists may be adequately served by sharing the travel lanes with motor vehicles. Usually, these are streets with very low traffic volumes and/or low speeds, which do not need special bicycle accommodations in order to be bicycle-friendly. In Fauquier County this includes rural, low volume roadways, as well as residential (local) streets.

Signed-Shared Roadways

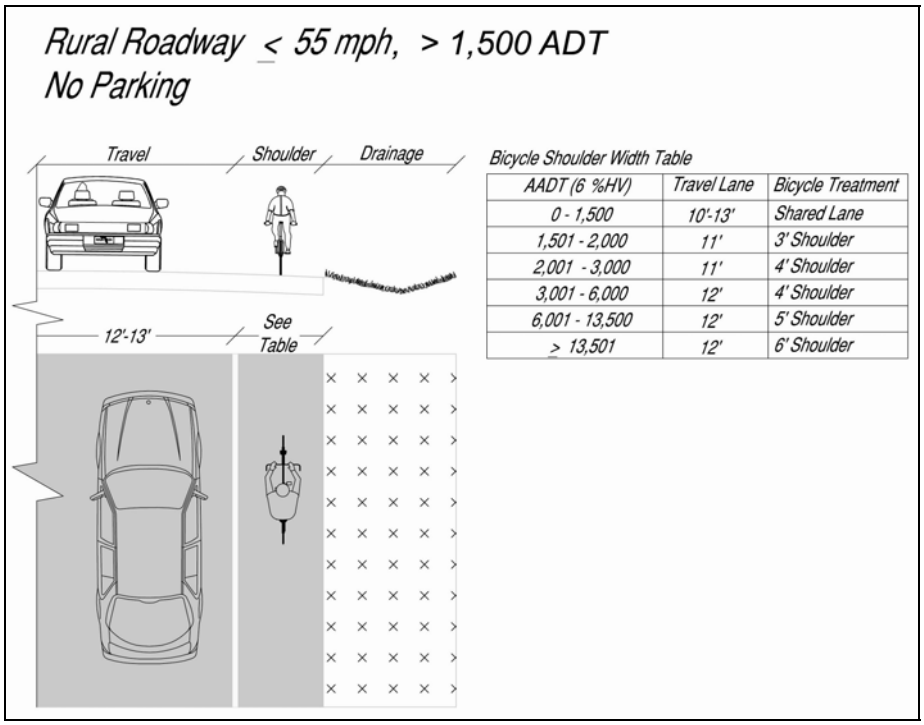
A signed-shared roadway is shared roadway which has been designated by signing as a preferred route for bicycle use. Bike route signs can posted on key routes to indicate to bicyclists that particular advantages exist to using these routes compared with alternative routes.

Striped/Paved Shoulders

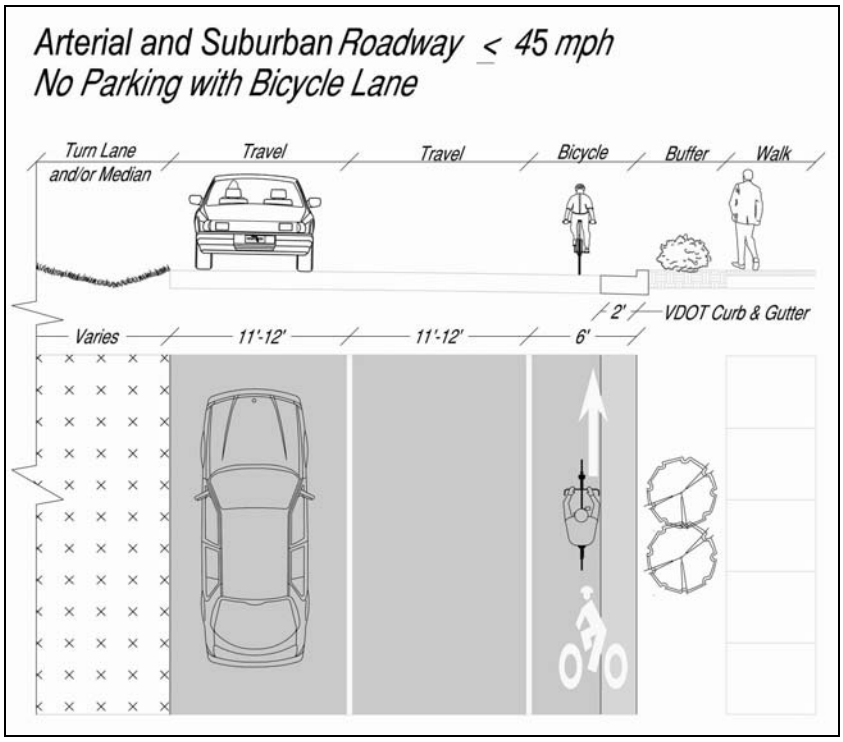
Striped/paved shoulders can provide cyclists with extra riding space to increase their comfort when traveling adjacent to motor vehicle traffic. There is no minimum width for paved shoulders, however a width of at least 4 feet outside the lane edge stripe is preferred. According to the AASHTO Guide for the Development of Bicycle Facilities (1999), "where 4-foot widths cannot be achieved, any additional shoulder width is better than none at all". See Detail 1 for recommended shoulder widths based on traffic volumes.

Bike Lanes

A bike lane is a portion of the roadway that has been designated by striping, signing and pavement markings for the preferential or exclusive use of bicyclists. Bike lanes are always located on both sides of the road (except one way streets), and carry bicyclists in the same direction as adjacent motor vehicle traffic. The minimum width for a bicycle lane is 4 feet on roads without curb and gutter, and 5 feet with a curb and gutter (5' includes the 2' gutter pan). Five- and six-foot bike lanes are typical for collector and arterial roads. See Detail 2 for recommended shoulder widths based on traffic volumes.



Detail 1



Detail 2

Recommended Facilities by Roadway Type

Pedestrian Accommodations:

Sidewalks

Sidewalks are the central ingredient of the pedestrian network. Sidewalk installation should be a routine part of road improvement and new construction projects in urban and suburban areas. Sidewalks should be included on both sides of roadways within Urban and Village Growth Areas and should be a minimum of 5-feet wide. Where a 5-foot minimum width can not be provided, the maximum possible sidewalk width is better than no sidewalk at all. Sidewalks should be separated from the roadway with a landscape buffer and should comply with the most recent ADA Accessibility Guidelines.

Pedestrian Crossing Treatments

Safe and convenient roadway crossings are essential to the Lancaster County pedestrian system. Marked crosswalks are used to designate optimal or preferred locations for pedestrians to cross. They should be marked with high-visibility markings (per the MUTCD) and be at least 6-feet wide[32]. Marked crosswalks are often more effective when they are complemented by good lighting, "Yield to Pedestrians" bollards, and traffic calming measures, such as median crossing islands and curb extensions. Raised crosswalks serve the dual purpose of slowing traffic and improving pedestrian visibility. Curb ramps are required at all marked and unmarked crosswalks.

APPENDIX C: MAINTENANCE PROGRAM

It is recommended that the County follow the Facility Maintenance Practices and Bikeway Maintenance Schedules below. The first step in developing a maintenance program is to identify what tasks need to be undertaken and who is responsible for each task. The Bikeways Maintenance Schedule (see Table 1) lays out maintenance tasks. The Trail Planner should be responsible for coordinating the execution of the Maintenance Schedule and should be the point of contact for citizens with questions regarding maintenance. Funding for an ongoing maintenance program should be included in the County's operating budget or Capital Improvements Program.

A Maintenance Action Request Form gives citizens an easy means of reporting maintenance concerns. The form allows citizens to notify County agencies about existing conditions affecting trail use. The requests are submitted to the Trails Planner who then refers the request to the appropriate (VDOT or internal). The forms are should be made available at locations throughout the County and on the County's web page.

The following description of maintenance practices was adapted from the 1996 Oregon Bicycle and Pedestrian Plan. The descriptions serve as guidelines for staff that are responsible for performing trail maintenance tasks.

Table 1: Multi-Use Trail Maintenance Schedule
Parks and Recreation Department

Task	Frequency	Comments
Regular inspection	2 times per year	Includes all off-road bikeways, identify needed repairs of pavement signs, marking, etc.
Trail sweeping	2 times per year	All paved trails
Trail snow removal	As needed	Clear snow from identified priority trails
Trail repairs	As needed	Repair of trails including potholes, cracks or other problems on shared-use paths, and benches, trash cans, and other trail amenities
Trail resurfacing	10-12 years	Applies to all asphalt trails
Debris removal from trails	As needed	Remove debris from trails such as limbs, slit and broken glass
Signs and markings	As needed	Repair or replace signs and markings identified during inspections
Vegetation control	As needed, at least 2 times per year	Trim limbs and shrubs 2 feet back from trail edge, trim grass from trail edges
Litter removal	6 times per year	Could be done with volunteers

Table 2: Typical Maintenance Costs
Parks and Recreation Department

Trail Element	Unit		Price Per Unit	Notes
Typical Maintenance Costs (For 1-Mile Paved Trail)				
Sweeping/blowing debris off trail tread (20 x/year)	Mile	*Sweeping/blowing debris off of trail= 10' wide trail x 5280' = 52, 800 ft. / 43,560= 1.21 acres x $22 avg. hourly wage= $26.62 per cleaning x 20 cleanings = $532.00 + 75% for equipment=$399 + $532=	$931.00	Removal of small natural debris such as leaves and twigs from the trail tread surface. Both mechanical and hand equipment is utilized.
Pick-up and removal of trash (20 x/year)	Mile	*Trash removal/pickup from trail and immediate adjacent areas= 10' wide trail x 5280' = 52, 800 ft. / 43,560= 1.21 acres x $22 avg. hourly wage= $26.62 per cleaning x 20 pickups/removals = $532.00 + 75% for equipment=$399 + $532=	$931.00	Removal of trash from department -owned receptacles; pick up/disposal of any trash or debris from trail environs.
Weed Control and Vegetation Management (10 x/year)	Mile	Weedtrimming 2000' x.01 =$20.00x 30 trimmings =$600	$600.00	Vegetation control rather than mowing. Includes trimming, cutting and pruning of weeds, vines, bushes and trees. Also includes spraying.
Mowing of grass safety zone on either side of trail (30 x/year)	Mile	Mowing 5' shoulders on each side of trail= 10' x 5280' = 52, 800 ft. / 43,560= 1.21 acres x $20 per mowing= $24.20 per mowed mile x 30 mowings = $726.00	$726.00	Mowing of grass, with riding or walk behind equipment. Widths vary by site.
Minor repairs to trail amenities	Mile	1.21 acres of trail area+/- in mile x $22 avg. hourly wage=$26.62 x 118 staff maintenance labor hours per year=$3141.00 + 75% for equipment & supplies=	$5,497.00	Includes minor erosion issues, painting, amenity installation, vandalisms, etc…
Asphalt Resurfacing Deprecation Account	Mile	$65,000 to resurface 1 mile of trail/15 year deprecation= $4,000 deprecation cost per mile	$4,000	Includes surface prep, may include milling and 2.5 inches of new asphalt.
Total Maintenance Cost for a mile of paved trail	**Mile**		**$12,685**	

*NRPA Maintenance Labor Standard=118 staff hours per acre per year. Per acre maintenance cost= average hourly wage ($22/hrFCPRD)+ 75% for equipment and supplies

APPENDIX D: RECOMMENDATIONS FOR SIDEWALK ORDINANCES

The recommendations below apply specifically to the Fauquier County Subdivision Ordinance, however the recommendations can also be applied to Town ordinances as appropriate.

- **Sidewalk width**
  The standard width of sidewalks detached from the curb should be changed from 4 feet to 5 feet. This additional foot in width is very important, as it enables two people to walk side by side, which is not possible on 4-foot wide sidewalks. Many other jurisdictions have increased their minimum sidewalk width to 5'. In addition, new rules that will be issued by the U.S. Access Board in the near future will require that 4' sidewalks provide a 5' passing area (a wider area where two wheelchairs can pass) every 200'. Additional sidewalk width is particularly important for locations with higher volumes of pedestrian activity, such as near schools, shopping centers, parks, and other pedestrian attractors. In these locations, it would be beneficial to require 6-foot wide sidewalks.

  The current requirements for sidewalk cross slopes in several standards drawings in Section 17 (FCSO) do not meet the requirements of the Americans with Disabilities Act (ADA). The cross slope standards in cross sections 1B, 2B, 3B, and 4B allow a 1":1' (8%) cross slope. ADA allows no more than a 1":48" cross slope (2%). These cross sections should be revised as soon as possible to meet federal requirements.

- **Sidewalk setback from the street**
  It is recommended that the cross sections in Section 17 be reviewed with respect to the required setback between the sidewalk and the street. The current amount of sidewalk separation required for local streets and local collectors is 4.5 feet, which is sufficient. The current amount of separation required for major thoroughfares is 9 feet, which is also sufficient. However the current amount of separation required for major collectors is only 1.5 feet – which should be increased to a minimum of 7 feet.

- **Roadway width**
  In general, the geometric design specifications (Section 17 of FCSO) should be reviewed to ensure that local and collector streets are not built excessively wide, as has been the practice in the past. Wide streets have resulted in excessive speeds on a number of Fauquier County roadways – more appropriate widths will help to traffic calm local and collector streets.

- **Driveway design**
  The Standard Driveway Entrance detail in Section 17 should clarify that the driveway apron (sloped area) must not extend through the sidewalk area of the driveway, which must be maintained at a maximum 2% cross slope. This is required by the ADA in order to maintain the accessibility of driveway entrances. In addition, the concrete sidewalk should be extended across driveway cuts to maintain the continuity of the sidewalk and reinforce to the driver that he/she must yield to pedestrians at driveways (which is required by law).

- **Curb design**
  "Rolled" or sloped curbs are not currently permitted in the FCSO, and should not be permitted in Fauquier County in the future. Rolled curbs are angled curbs that are often preferred by developers because they do not require a driveway cut and thus reduce development costs. However they enable drivers to park on the sidewalk, and otherwise degrade the aesthetic qualities of residential streets.

- **Street trees**
  Street trees should be required between the sidewalk and the street along all new roadways. Street trees help to reduce motor vehicle speeds, and also greatly improve pedestrians' feeling of comfort and safety in the roadway environment. Large shade trees such as Sycamore, Elm and Japanese Zelkova are preferred over medium and small trees (such as Bradford Pear) that do not offer as much shade. Street trees should typically be placed no closer than 30 feet on center, and no greater than 60 feet on center, depending on the species of tree. In locations with no buffer strip, consideration can be given to providing tree planting behind the sidewalk, which may improve aesthetic conditions and provide shade, but will not improve pedestrians' sense of safety in the roadway environment.

  For narrow landscape buffers less than 5 feet wide, care should be taken to use shade tree species that can survive in a narrower space and have less invasive root systems, such as varieties of Chinese Pistache and Maple trees.